WHAT IS CLAIMED IS:

1. An array comprising at least one pattern of probe oligonucleotide spots stably associated with the surface of a solid support, wherein each probe oligonucleotide spot of said pattern corresponds to a target nucleic acid and comprises an oligonucleotide probe composition made up of long oligonucleotide probes that range in length from about 50 to 120 nt.

2. The array according to Claim 1, wherein two or more different target nucleic acids are represented in said pattern.

3. The array according to Claim 2, wherein each probe oligonucleotide spot in said pattern corresponds to a different target nucleic acid.

4. The array according to Claim 1, wherein each long oligonucleotide probe on said array has a high hybridization efficiency for its respective target.

5. The array according to Claim 1, wherein each long oligonucleotides of said array has a low propensity for non-specific hybridization.

6. The array according to Claim 4, wherein each of said probe long oligonucleotides of said array exhibit substantially the same high hybridization efficiency for their respective targets.

7. The array according to Claim 1, wherein said long oligonucleotide probes are covalently attached to said surface of said substrate.

8. The array according to Claim 7, wherein said each of said long oligonucleotide probes is cross-linked to the surface of said support at at least one site.

9. The array according to Claim 7, wherein each of said oligonucleotide probes is cross-linked to the surface of said support at at least two sites.

10. The array according to Claim 1, wherein the density of spots on said array does not exceed about 1000/cm^2.

11. The array according to Claim 10, wherein the density of spots on said array does not exceed about 400/cm^2.

12. The array according to Claim 1, wherein the number of spots on said array ranges from about 50 to 50,000.

13. The array according to Claim 1, wherein the number of spots on said array ranges from about 50 to 10,000.

14. An array comprising a pattern of probe oligonucleotide spots covalently bound to the surface of a solid support, wherein each probe oligonucleotide spot corresponds to a target nucleic acid and comprises a long oligonucleotide probe composition made up of long oligonucleotides of from about 60 to 100 nt in length, wherein each of said long oligonucleotide probes exhibits substantially the same high hybridization efficiency with its respective target and low level of non-specific hybridization.

15. The array according to Claim 14, wherein ten or more different target nucleic acids are represented in said pattern.

16. The array according to Claim 15, wherein each probe oligonucleotide spot in said pattern corresponds to a different target nucleic acid.

17. The array according to Claim 15, wherein two or more probe oligonucleotide spots

in said pattern correspond to the same target nucleic acid.

18. The array according to Claim 14, wherein the length of each of said unique oligonucleotides ranges from about 65 to 90 nucleotides.

19. The array according to Claim 14, wherein the density of spots on said array does not exceed about 1000/cm^2.

20. The array according to Claim 14, wherein the density of spots on said array does not exceed about 400/cm^2.

21. The array according to Claim 14, wherein the number of spots on said array ranges from about 50 to 50,000.

22. The array according to Claim 14, wherein the number of spots on said array ranges from about 50 to 10,000.

23. An array comprising a pattern of probe oligonucleotide spots of a density that does not exceed about 400 spots/cm^2 covalently attached to the surface of a glass support, wherein each probe oligonucleotide spot corresponds to a different target nucleic acid and comprises an oligonucleotide probe composition made up of long oligonucleotides of from about 65 to 90 nt in length, wherein each of said long oligonucleotides has substantially the same high hybridization efficiency for its corresponding target and the substantially the same low level of non-specific hybridization.

24. A method of preparing an array comprising at least one pattern of probe oligonucleotide spots stably associated with the surface of a solid support, wherein each probe oligonucleotide spot corresponds to a target nucleic acid and comprises an oligonucleotide probe composition made up of long oligonucleotide probes ranging in

length from about 50 to 120 nt, said method comprising:

generating said long oligonucleotide probes; and

stably associating said long oligonucleotide probes on the surface of said solid support in a manner sufficient to produce said array.

25. The method according to Claim 24, wherein said stably associating comprises covalently attaching said probes to said surface.

26. The method according to Claim 25, wherein said covalently attaching comprises cross-linking.

27. The method according to Claim 26, wherein said cross-linking is by exposure to UV light.

28. The method according to Claim 24, wherein said stably associating comprises contacting said long oligonucleotide probes to said surface under denaturing conditions.

29. The method according to Claim 24, wherein said surface is glass.

30. A hybridization assay comprising the steps of:

contacting at least one labeled target nucleic acid sample with an array according to Claim 1 under conditions sufficient to produce a hybridization pattern; and

detecting said hybridization pattern.

31. The method according to Claim 30, wherein said method further comprises washing said array prior to said detecting step.

32. The method according to Claim 30, wherein said method further comprises preparing said labeled target nucleic acid sample.

33. The method according to Claim 32, wherein said preparing comprises conjugating a detectable label to a functionalized target nucleic acid.

34. The method according to Claim 30, where said method further comprises:

generating a second hybridization pattern; and

comparing said hybridization patterns.

35. A kit for use in a hybridization assay, said kit comprising:

an array according to Claim 1.